

REMARKS

Applicant expresses appreciation for the Examiner's constructive action in clarifying the status of all claims presently pending in the instant application. Applicant concurs with the enumeration set forth in the Office Action Summary included with the present Office Action. Claims 1-3, 5, 7, 9, 11-29 and 31-34 remain pending in the present application, all of which stand rejected. Claims 1, 29, 31-33 are the independent claims. Reconsideration of the application in light of the following remarks is respectfully requested.

As discussed previously, Applicant's invention, as recited by present claims 1-3, 5, 7, 9, 11-23, 25-29, and 31-34, as amended, provides a nonwoven, fibrous mat comprising a blend of a major portion composed of chopped glass fibers having an average fiber diameter of about $11 \pm 1.5 \mu\text{m}$ and a minor portion composed of fine staple fibers having an average fiber diameter of less than about $5.5 \mu\text{m}$. The minor portion is composed of glass or mineral fibers and comprises about 1-30 percent of the dry weight of the web. Also provided is a gypsum board faced with such a mat. In various embodiments, the gypsum board exhibits a combination of desirable structural and functional features that render it fire resistant and easily painted or otherwise given an aesthetically pleasing finish after installation with a minimum of surface preparation required. The mat has a high permeability, permitting easy extraction of excess water ordinarily present during slurry-based manufacture of gypsum or other hydraulic set board. Surprisingly and unexpectedly, gypsum board faced in accordance

with the invention with the present nonwoven glass fiber mat, has a smoother surface than boards made with known mats employing fibers having either larger or smaller average diameter. It is especially surprising and significant that the aforementioned fiber blend results in smoother board than would otherwise be obtained in prior art mats made with fibers having a single average diameter. Significantly, the present Office Action fails to take any cognizance of applicant's Declaration Under 37 CFR 1.132 made by Alan M. Jaffee and submitted December 26, 2006, wherein evidence of the unexpectedly superior smoothness of the present mat and gypsum board was provided. Applicant again maintains the data adduced therein provide strong, objective evidence of the non-obviousness of the claimed subject matter.

Claims 1-3, 5, 7, 9, 11-15, 17-18, 25, 28, 29, and 31-34 were rejected under 35 USC 103(a) as being unpatentable over US Patent 4,647,496 to Lehnert in view of US Patent 5,389,716 to Graves in further view of US Patent 4,637,951 to Gill.

Lehnert et al. provides an exterior finishing system for a building, such as a fibrous mat-faced gypsum board having a water resistant, set gypsum core.

The Examiner again asserts the position that Lehnert teaches a fibrous mat-faced gypsum board comprised of a gypsum core that is sandwiched between two sheets of glass mat. It has been further alleged that Lehnert teaches glass fibrous mat made from chopped fiber in a resinous binding, such as modified urea-formaldehyde.

In response, applicant has observed that Lehnert calls for facers that are porous glass fiber mats. See, e.g., col. 4, line 57. In addition, Lehnert discloses gypsum that penetrates "but part-way into the thickness of the mat" of one board face (col. 4, lines 59-60) and "substantially through the thickness of the mat" at the other face (col. 5, lines 5-6 and 24-31). It is said to be necessary for the mats to be permeable to allow the high water content of the gypsum slurry to be extracted as liquid or vapor during the production and board curing (col. 9, lines 8-16).

The Examiner has acknowledged that Lehnert does not teach the fiber sizes and compositions of the glass fibrous mats recited by applicant's independent claims 1, 29, 31, 32, and 33. Significantly, Lehnert employs mats that are said to be known and commercially available, thereby distinguishing applicant's mat. Col. 9, lines 28-31. Accordingly, she has cited Graves, which discloses a binder composition for fibrous mats that is said to be fire resistant when cured. The mats are said to be suitable for a backing layer for gypsum.

The Examiner has reiterated a position that Graves discloses that glass fibers improve the structural foundation of finished mats, and that fibers of varying sizes may be blended together to form the mat. It is said that by varying the length and diameter of the fibers the structural properties can be altered. However, any such disclosure falls far short of the particular ranges delineating applicant's mat and gypsum boards faced therewith. Significantly, the addition of Graves to Lehnert does not cure the lack of disclosure of the

beneficially smooth surface provided by applicant's invention, and as established by data both in the instant specification and as provided by the Jaffee Declaration.

Recognizing the deficiency of even the Lehnert/Graves combination, the Examiner has further cited Gill et al., which is directed to a fibrous mat facer said to exhibit improved strikethrough resistance. The mat is said to be especially suited as a carrier, substrate, or facer for various curable materials that are placed on one surface of the mat while in a liquid state. Gill et al. further discloses a laminate comprising the foregoing mat and a vinyl plastisol coating or a coating of a foam insulation material such as polyurethane or polyisocyanurate foam.

Applicant maintains his traverse of the Examiner's contention that the combination of Lehnert, Graves, and Gill discloses or suggests the subject matter of applicant's claims, as well as the propriety of combining the references in the manner proposed.

In support of the traversal, applicant submitted, in part, that the fibrous mat provided by Gill et al. is used for an entirely different purpose than applicant's mat. In particular, the Gill mat is said to be especially useful when forming composite materials employing a curable thermoset, such as a foamable material such as a polyurethane or polyisocyanurate rigid foam board, or as a carrier web in the vinyl flooring industry. In both instances, the mat is said to be "resistant remarkably" to strikethrough. The need for relatively high permeability would lead a skilled artisan away from combining Gill, which does not teach a gypsum or like construction board, and also teaches avoidance of strikethrough, an objective diametrically

diametrically opposed to the level porosity needed for gypsum board fabrication. It is thus maintained that the Examiner's motivation, in express contradiction to the teaching of Gill, is plainly a hindsight reconstruction based on applicant's own disclosure as a template.

In particular, the Gill mat is differentiated, since it is said to inhibit strikethrough, whereas embodiments of the Lehnert gypsum material require at least some amount of strikethrough to achieve the preferred structure delineated by Lehnert, e.g. at col. 5, lines 24-27. In context, these factors would provide a skilled artisan no basis even to try the Gill mat with a Lehnert gypsum board. Rather, the artisan would instead eschew the Gill mat for making gypsum board, based on Gill's teaching pertaining to inhibited strikethrough.

It was also submitted that were the Gill teaching to be modified to provide a mat having applicant's increased permeability, it would be highly likely not to attain the objective of inhibiting strikethrough. Such a result is submitted to preclude the reconstruction proposed by the Examiner, in view of *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). See also *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH* ["A prior art reference may be considered to teach away when 'a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.'"] 139 F.3d 877, 45 USPQ2d 1977, 1984 (Fed. Cir. 1998), quoting *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994).] and *McGinley v. Franklin Sports, Inc.* ["We have noted elsewhere, as a 'useful general rule,' that references that teach away cannot serve to

create a *prima facie* case of obviousness.” 262 F.3d 1339, 1354, 60 U.S.P.Q.2d 1001 (Fed. Cir. 2001) (citing *In re Gurley, supra*]).

At pages 11 and 12 of the instant Office Action, the Examiner at, has responded to applicant’s argument that the mat disclosed by Gill is resistant to strikethrough by stating that it is not clear how strikethrough is related to be diametrically opposed to the level of porosity needed for gypsum board fabrication. Gill teaches a glass fiber mat that is resistant to strikethrough of various curable polymers. Conspicuously absent from Gill is reference to gypsum¹ in any form, let alone as gypsum board. For Gill, strikethrough is “the inadvertent or undesired seeping through the thickness of the mat by the polymer substance [i.e., the material faced by the mat] while in its liquid state.” Col. 1, lines 28-30. The need to avoid strikethrough is a particular consequence of the types of materials to which the Gill mat is applied, e.g. rigid foam board and vinyl flooring. These materials do not include gypsum board. See col. 4, lines 35-43.

In fact, Gill further recognizes control of porosity as a conventional means of limiting strikethrough. Col. 1, lines 38-39. By delineating the importance of his mat preventing strikethrough, Gill expressly creates an aversion for using any fiber configuration taught in a mat used in examples in which some degree of penetration of the faced matrix is important, such as gypsum board. Notably, each of Gill’s examples (i.e. Examples 1 and 2) specifically notes the lack of strikethrough penetration as important.

¹ The word “gypsum” does not appear in Gill.

Applicant thus respectfully submits the purpose of producing a mat that is resistant to strikethrough, is diametrically opposite to allowing for the penetration of gypsum "but part-way into the thickness of the mat" of one board face (col. 4, lines 59-60) and "substantially through the thickness of the mat" at the other face (col. 5, lines 5-6 and 24-31), As disclosed by Lehnert at col. 4, lines 59-60; col. 5, lines 5-6 and 24-31.

In fact, Lehnert goes on to disclose that the fibrous mat comprises material which is capable of forming a strong bond with the set gypsum comprising the core of the support surface (col. 9, lines 17-19). The manufacture of the preferred forms of board can be accomplished by controlling the viscosity of the aqueous slurry of the calcined gypsum in a manner such that the slurry penetrates the underlying and overlying mats to the desired degree. In manufacturing each of the preferred forms of board, the viscosity of the slurry should be such that it penetrates the thickness of the overlying mat over the entire surface area thereof (col. 13, lines 5-13).

Applicant respectfully submits that clearly an artisan of ordinary skill would understand that, Gill teaches away from the production of a mat that would require the strikethrough of various components, solving the problem of which is a stated purpose of Gill (Abstract, lines 1-5; col. 1, lines 27-30).

Additionally, it is respectfully submitted that, Lehnert clearly teaches away from the use of any fibrous mat that is designed to resist the strikethrough of gypsum, which is

required in order to create a fibrous mat-faced gypsum board that is structurally sound enough for use on the exterior of buildings, which is a stated purpose of Lehnert (col. 1, lines 7-18)

Thus, it is respectfully submitted that, Lehnert teaches away from any combination that would seek to use a fibrous mat whose purpose is to limit strikethrough of components as much as possible.

Additionally, applicant believes that this interpretation is further supported by the stated purpose of both Lehnert and Gill, strengthening applicant's argument.

Graves is not seen to remedy the deficiencies of Gill and Lehnert, and the Examiner does not site graves for such. Graves is cited for its relevance to fire resistance.

The facts herein stand in marked contrast to the situation addressed by the Supreme Court in its recent decision in *KSR v. Teleflex*, 127 S. Ct. 1727 (2007), wherein elements in a combination carried out their ordinary function. On the other hand, in the present situation, the various mats provided by Lehnert, Graves, and Gill play diametrically opposed functions, as set forth above. What the Supreme Court regarded as motivation to combine references is clearly inapplicable here. See *KSR* at 1740, quoting *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 96 S. Ct. 1532, 47 L. Ed. 2d 784 (1976).

The Examiner has further contended that it would have been obvious to optimize the fiber blends of Gill to improve or obtain the desired porosity of the gypsum board. Applicant traverses the Examiner's reasoning. First, it is the facer mat, and not the gypsum board itself, for which the correct porosity is beneficial, But even more important, the

Examiner has not shown any basis on which to establish that the correct porosity is in any way indicative of the beneficial smoothness of applicant's gypsum board. To the contrary, the factors believed in the prior art to contribute to a smooth hand for the facer mat run counter to the factors needed to obtain good porosity. Even if, *arguendo*, a skilled person would be motivated to select a beneficial porosity, such a selection in no way motivates obtaining a smooth hand, and provides no indication that the smooth and good porosity could be obtained in combination for the particular fiber blend delineated by applicant's claims.

At page 4, the Examiner refers to US Patent No. 4,129,674 to Hannes for the proposition that mats using two different fiber sizes are known, but has not formally applied said reference in the present Office Action. It is respectfully noted that the fiber blend taught therein is significantly different than applicant's blend. More specifically, Hannes calls for the combination of monofilament fibers having a 12-19 μm diameter with fiber bundles of fibers having the same size range of 12-19 μm . See col. 4, line 20. Such a blend is entirely different than applicant's blend of chapped glass and fine stapled fibers. Hannes is further distinguished as teaching mat said to be useful for roofing materials such as asphalt shingles. No gypsum board application of the Hannes mat is suggested.

For at least these reasons, it is submitted that the combination of Lehnert, Graves, and Gill does not disclose or suggest a gypsum or other hydraulic set board having the outstanding combination of structural and functional properties afforded by the gypsum board recited by

present claims 1-3, 5, 7, 9, 11-15, 17-18, 25, 28, 29, and 34, the facer of claims 31-32, and the hydraulic set board of claim 33.

Accordingly, reconsideration of the rejection of claims 1-3, 5, 7, 9, 11-15, 17-18, 25, 28, 29, and 31-34 under 35 USC 103(a) as being unpatentable over the combination of Lehnert, Graves, and Gill is respectfully requested.

Claims 18-23 were rejected under 35 USC 103(a) as being unpatentable over Lehnert in view of Graves and Gill and further in view of US Patent Application Publication US 2003/0032350 to Kajander et al., which is directed to a foam coated nonwoven fibrous mat said to have properties rendering it particularly suited for a facer on gypsum wallboard.

The Examiner has acknowledged that the combination of Lehnert, Graves, and Gill fails to disclose the particular binders recited by claims 18-23, and has thus cited Kajander et al. However, the Examiner has not pointed to any disclosure or suggestion in Kajander et al. of the particular fiber sizes and amounts required by applicant's claims. Therefore, it is respectfully submitted that even the addition of Kajander et al. fails to cure the deficiency in the combination of Lehnert, Graves, and Gill.

Applicant respectfully submits that the subject matter of claim 1 is not disclosed by Lehnert, Graves, and Gill for at least the reasons set forth above. Kajander et al., even in any combination of these references, does not cure this deficiency. Accordingly, claims 18-23, which depend from claim 1, are patentable for at least the same reasons as claim 1.

Accordingly, reconsideration of the rejection of claims 18-22 under 35 USC 103(a) as being obvious over the combination of Lehnert, Graves, Gill, and Kajander et al. is respectfully requested.

Claims 16 and 25-28 were rejected under 35 USC 103(a) as being unpatentable over Lehnert in view of Graves and Gill in further view of US Patent Publication US 2004/0209071 to Carbo et al., which discloses acoustical tiles, also known as acoustical panels, ceiling tiles, or ceiling panels, that are said to inhibit the growth of fungus, bacterial and other micro-organism.

Applicant respectfully submits that Carbo is not seen to remedy the above cited deficiencies of Lehnert, Graves and Gills. The Examiner has not pointed to any disclosure in Carbo that remedies this deficiency, and indeed, Carbo is only cited for its relevance to mold resistance.

As such, it is respectfully submitted that, claims 16 and 25-28, which depend from claim 1, are patentable for at least the same reasons as claim 1.

Accordingly, reconsideration of the rejection of claims 16 and 25-28 under 35 USC 103(a) as being obvious over the combination of Lehnert, Graves, Gill, and Carbo et al. is respectfully requested.

CONCLUSION

In view of the foregoing remarks, and the Rule 132 Declaration by Alan M. Jaffee submitted on December 26, 2006, it is respectfully submitted that the present application has been placed in allowable condition. Reconsideration of the rejection of this application, entry of the present amendment, and allowance of claims 1-3, 5, 7, 9, 11-23, 25-29, and 31-34, as amended, are earnestly solicited.

Respectfully submitted,
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